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## TRUST IN DECONSTRUCTED RECOMMENDER SYSTEMS CASE STUDY: NEWS RECOMMENDER SYSTEMS

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### Extended abstract

Increasingly, algorithms play an important role in everyday decision-making processes. Driven by big data and new technologies (e.g. deep learning), it is argued that they are the “power brokers in society” (Diakopoulos, 2015). Recommender systems, specifically, are algorithms that serve to influence end-users’ decision-making (e.g. what to read, who to befriend, who to rent to...). The power embedded in such algorithms is only expected to intensify as implementations are widespread, grow in number and context (O’Neil, 2016). The companies that develop and produce these are not neutral, but have an economic goal and specific vision on how society should operate (e.g. Facebook wants to make the world a more “open and connected” place) (Hoffman, Johnson, Bradshaw, & Underbrink, 2013). In this regard, boyd and Crawford (2012) claim that the data used in these algorithms doesn’t speak for itself, rather, they speak the story the companies would like to tell. Indeed, these algorithms should never be trusted blindly.

Social scientists have focused on biases that arise when algorithms are implemented in everyday life: black people who are perceived as gorillas by image recognition software, criminal justice risk assessment algorithms that are racially biased against black prisoners, and job recruitment algorithms that have gender bias (Barocas & Selbst, 2016). Following Seavers’ (2017) categorization, these scholars looked at **algorithms in culture**, which he compared to rocks in a cultural stream. The rocks could shape the

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flow of the stream and the stream could erode the rocks as two distinct entities. Gillespie (2016), however, argued that we should not only look at the impact of algorithmic outcomes, but treat the algorithms themselves as producers of information with cultural value. Indeed, so called 'trending algorithms', for example, "matter also because they come to be culturally meaningful: points of interest, 'data' to be debated or tracked, legible signifiers of shifting public taste or a culture gone mad, depending on the observer" (p.64). Gillespie saw **algorithms becoming culture**, building further on Seavers' metaphor; algorithms, according to Gillespie, could be seen as a water pump, feeding water to that cultural stream.

Earlier, Gillespie (2014, p.169) had urged researchers to "not conceive of algorithms as abstract, technical achievements", but instead they should "unpack the warm human and institutional choices that lie behind these cold mechanisms". In other words, he called on researchers to look at the inner workings of how an algorithm is created and maintained. Kitchin (2017) calls this the socio-technical assemblage of algorithms composed of collective human practices. Seaver (2017) argues for treating **algorithms as culture**. Extending his metaphor of a river, the algorithms are no stones or pumps, but rather the water itself making up the cultural stream. Despite the many academics that are joining the debate to denounce the bias, opaqueness and unfairness often found in these algorithms, little empirical research has invested in treating algorithms in its full socio-technical assembly as culture (Beer, 2017; Boddington, 2017; Bostrom & Yudkowsky, 2011; Crawford, Gray, & Miltner, 2014).

Bucher (2017) uses the notion of **algorithmic imaginary** to better understand how humans are "thinking about what algorithms are, what they should be, how they function [...]" (p.40). Experiences are central in her understanding of algorithms. Seaver (2017), however, points out that we shouldn't talk about (the experience with) one algorithm, but rather algorithmic systems, as algorithms are not "stand-alone little boxes" but rather big intertwining systems. Inspired by both authors, we argue that we need to decouple the different aspects of these algorithmic systems in order to better understand how they are imagined by end-users. In other words, we strive to understand a **deconstructed algorithmic imaginary**, by demystifying the imagined processes that shape an algorithm in the minds of the end-users. We therefore strive to understand how they imagine the different components of the socio-technical assembly, what assumptions they make, and how they trust recommender systems.

Over the years, trust has been studied by many scholars in numerous contexts of technological innovation. The field of study, however, predominantly researches trust in relation to the adoption of new technologies (Rogers, 2004; Schaefer, Chen, Szalma, & Hancock, 2016). Following the paradigm of "algorithms as culture", trust (or the willingness to be vulnerable (Hoffman et al., 2013)) is of interest because it gives an insight into how people perceive the algorithmic system, rather than to boost adoption. Furthermore, to fully understand a someone's trust in an algorithm, we need to understand how that person trusts the different parts of the socio-technical assembly of algorithmic systems.

Currently, social network sites (SNS), private companies (e.g. Google, Apple...) and news outlets are putting ever more effort into personalizing news using news

recommender systems (NRS). NRS organize, select and aggregate news to influence the decision-making of an end-user without a transparent explanation on the process (e.g. Google News, Flipboard and Facebook timeline). Therefore, we focus our study on the end-users of these NRS.

We put forward the following empirical research questions:

- What assumptions do people have about the socio-technical assembly of a news recommender system? (RQ1)
- How do people (dis)trust the socio-technical assembly of a news recommender system? (RQ2)

To answer these research questions, we are currently conducting in-depth interviews with 25 end-users of NRS. We are targeting end-users who encounter NRS in their daily life and mainly use their smartphone or computer to access (digital) news through aggregators, SNS or websites. Furthermore, we make use of an online recruitment survey to ensure a varied sample in terms of the kind of news user (frequency & news topic interest) and socio-demographic features (gender, age, education).

During the interview we use probes (outputs of some NRS), general questions and probing techniques (e.g. “sum up all actors you think are involved to produce an output”, “try to make links and give goals to the different actors”, Q-sort on trust of actors...) to enable respondents to better think about the socio-technical assembly of a NRS and how they (dis)trust the different components.

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